Listing of Claims:

The following listing of claims will replace all prior versions and listings of claims in this application:

1-4. (Canceled)

5. (New) A power factor correcting converter comprising:

an input configured to be connected to an input voltage source;

an output configured to be connected to an output circuit including at least one filter capacitor and a load;

a control circuit;

at least one inductor;

at least one power switch being turned on and off by the control circuit so that the input voltage source is connected across the at least across one inductor when the power switch is on;

at least one rectifier that connects the at least one inductor between the input voltage source and the output circuit so inductor current flows out from the input voltage source and into the output circuit when the power switch is off,

the control circuit modulating on and off intervals of the power switch so a momentary input current at the input of the converter is directly proportional to both a momentary value of an input voltage at the input of the converter and to a momentary value of a current of the load, the control circuit comprising:

a SR flip-flop that in a set state turns the power switch on;

an integrator;

a clock generator that produces a fixed frequency train of narrow pulses for resetting the flip-flop and the integrator, a saw tooth voltage generated by the integrator by integrating a signal proportional to the current of the load, the integrator being reset by the pulses from the clock generator so an amplitude of the saw tooth voltage is proportional to the current of the load and inversely proportional to the frequency of the clock pulses; and

a comparator that compares the saw tooth voltage to a signal proportional to a current delivered to the output circuit, the comparator setting the SR flip-flop when a value of the current delivered to the output circuit drops below a value of the saw tooth voltage.

6. (New) A power factor correcting converter comprising:

an input configured to be connected to an input voltage source;

an output configured to be connected to an output circuit including at least one filter capacitor and a load;

a control circuit;

at least one inductor;

at least one power switch being turned on and off by the control circuit so that the input voltage is connected across the at least across one inductor when the power switch is on;

at least one rectifier that connects the inductor between the input voltage source and the output circuit so inductor current flows out from the input voltage source and into the output circuit when the power switch is off, the control circuit modulating the on and off intervals of the power switch so a momentary input current at the input of the converter is directly proportional to both a momentary value of an input voltage at the input of the converter and a momentary value of a current of the load and is independent of an average or RMS value of the input voltage of the converter, the control circuit comprising:

a SR flip-flop that in a set state turns the power switch on;

an integrator;

a clock generator that produces a train of narrow pulses for resetting the flip-flop and the integrator, the frequency of the pulses being proportional to a half wave average or RMS value of the input voltage of the converter, a saw tooth voltage generated by the integrator by integrating a signal proportional to the current of the load, the integrator being reset by the pulses from the clock generator so an amplitude of the saw tooth voltage is proportional to the current of the load and inversely proportional to the frequency of the clock pulses; and

a comparator that compares the saw tooth voltage to a signal proportional to a current delivered to the output circuit, the comparator setting the SR flip-flop when a value of the current delivered to the output circuit drops below a value of the saw tooth voltage.

7. (New) A power factor correcting converter comprising:

an input configured to be connected to an input voltage source;

an output configured to be connected to an output circuit comprising at least one filter capacitor and a load;

a control circuit;

at least one inductor;

at least one power switch being turned on and off by the control circuit so that the input voltage source is connected across the at least across one inductor when the power switch is on;

at least one rectifier that connects the at least one inductor between the input voltage source and the output circuit so inductor current flows out from the input voltage source and into the output circuit when the power switch is off, the control circuit modulating on and off intervals of the power switch so a momentary input current at the input of the converter is directly proportional to both a momentary value of an input voltage at the input of the converter and to a momentary value of a current of the load and is inversely proportional to an average or RMS value of the input voltage of the converter,

wherein the control circuit comprises:

an SR flip-flop that in a set state turns the power switch on;

an integrator;

a clock generator that produces a train of narrow pulses for resetting the flip-flop and the integrator, a frequency of the pulses being proportional to a half wave average or RMS value of the input voltage of the converter, a saw tooth voltage generated by the integrator by integrating a signal directly proportional to the current of the load and inversely proportional to the average or the RMS value of the input voltage of the converter, the integrator being reset by the pulses from the clock generator so an amplitude of the saw tooth voltage is proportional to the current of the load and inversely proportional to the frequency of the clock pulses; and

a comparator that compares the saw tooth voltage to a signal proportional to a current delivered to the output circuit, the comparator setting the SR flip-flop when a value of the current delivered to the output circuit drops below a value of the saw tooth voltage.

8. (New) A power factor correcting converter comprising:

an input configured to be connected to an input voltage source;

an output configured to be connected to an output circuit comprising at least one filter capacitor and a load;

a control circuit;

at least one inductor;

at least one power switch being turned on and off by the control circuit so that the input voltage source is connected across the at least one inductor when the power switch is on;

at least one rectifier that connects the at least one inductor between the input voltage source and the output circuit so inductor current flows out from the input voltage source and into the output circuit when the power switch is off, the control circuit modulating on and off intervals of the power switch so a momentary input current at the input of the converter is directly proportional to both a momentary value of an input voltage at the input of the converter and to a momentary value of a current of the load, the control circuit comprising:

an SR flip-flop that in a set state turns the power switch on;

an integrator;

a clock generator that produces a fixed frequency train of narrow pulses for resetting the flip-flop and the integrator, a saw tooth voltage generated by the integrator by integrating a signal proportional to the current of the load and inversely proportional to a square of an average or RMS value of the input voltage of the converter, the integrator being reset by the pulses from the clock generator so an amplitude of the saw tooth voltage is proportional to the current of the load and inversely proportional to the frequency of the clock pulses and inversely proportional to a square of the average or RMS value of the input voltage of the converter; and

a comparator that compares the saw tooth voltage to a signal proportional to a current delivered to the output circuit, the comparator setting the SR flip-flop when a value of the current delivered to the output circuit drops below a value of the saw tooth voltage.